

WHAT IS CLAIMED IS:

- 1 1. A dried hemoactive material comprising:
2 a cross-linked biologically compatible polymer which forms a hydrogel
3 when exposed to blood; and
4 a non-cross-linked biologically compatible polymer which solubilizes
5 when exposed to blood:
6 wherein the cross-linked polymer is dispersed in a dried matrix of the non-
7 cross-linked polymer.
- 1 2. A dried hemoactive material comprising:
2 a non-cross-linked polymer comprising a dry gelatin matrix; and
3 dry, cross-linked gelatin polymer particles dispersed in the dry non-cross-
4 linked gelatin matrix.
- 1 3. A material as in claim 1 or 2, wherein the cross-linked polymer
2 has a degradation time of at least one day.
- 1 4. A material as in claim 1 or 2, wherein the non-cross-linked
2 polymer solubilizes in 15 minutes or less when exposed to blood.
- 1 5. A material as in claim 1 or 2, wherein the cross-linked polymer is
2 fragmented so that, upon hydration in blood, the polymer will form a gel with a sub-unit
3 size in the range from 0.01 mm to 5 mm.
- 1 6. A material as in claim 5, wherein the cross-linked polymer has an
2 equilibrium swell in the range from 400% to 5,000%.
- 1 7. A material as in claim 1 or 2, wherein the cross-linked polymer is
2 present at from 50 weight % to 95 weight % of the material and the non-cross-linked
3 material is present at from 50 weight % to 1 weight % of the material.
- 1 8. A material as in claim 7, further comprising a plasticizer present at
2 from 1 weight % to 20 weight % of the material.
- 1 9. A material as in claim 8, wherein the plasticizer is present in at
2 least the non-cross-linked polymer.

1 10. A material as in claim 9, wherein the plasticizer is selected from
2 the group consisting of polyethylene glycol, sorbitol, and glycerol.

1 11. A material as in claim 1, wherein the cross-linked polymer is a
2 protein selected from the group comprising gelatin, collagen, albumin, hemoglobin,
3 fibrinogen, fibrin, fibronectin, elastin, keratin, laminin, and casein.

1 12. A material as in claim 1, wherein the cross-linked polymer is a
2 carbohydrate or carbohydrate derivative selected from the group consisting of
3 glycosaminoglycans, starches, celluloses, hemicelluloses, xylan, agarose, alginate, and
4 chitosan.

1 13. A method as in claim 1, wherein the cross-linked polymer is a non-
2 biologic hydrogel-forming polymer or copolymer selected from the group consisting of
3 polyacrylates, polymethacrylates, polyacrylamides, polyvinyl polymers, polylactides-
4 glycolides, polycaprolactones, polyoxyethelenes, and copolymers thereof.

1 14. A material as in claim 1, wherein the non-cross-linked biologically
2 compatible polymer is a protein selected from the group consisting of gelatin, collagen,
3 albumin, elastin, and keratin.

1 15. A material as in claim 1, wherein the non-cross-linked biologically
2 compatible polymer is a carbohydrate or carbohydrate derivative selected from the group
3 consisting of glycosaminoglycans, alginate, starch, cellulose, and derivatives thereof.

1 16. A material as in claim 1 or 2, further comprising an active agent.

1 17. A material as in claim 16, wherein the active agent is present in at
2 least the non-cross-linked polymer.

1 18. A material as in claim 16, wherein the active agent is present in at
2 least the cross-linked polymer.

1 19. A material as in claim 16, wherein the active agent is present in
2 both the non-cross-linked polymer and the cross-linked polymer.

- 1 20. A material as in claim 16, wherein the active agent is selected from
2 the group consisting of antibiotics, anti-neoplastic agents, bacteriostatic agents,
3 bactericidal agents, antiviral agents, anesthetics, anti-inflammatory agents, hormones,
4 anti-angiogenic agents, antibodies, enzymes, enzyme inhibitors, and neurotransmitters.
- 1 21. A material as in claim 16, wherein the active agent is a hemostatic
2 substance.
- 1 22. A material as in claim 21, wherein the hemostatic substance is a
2 clotting factor.
- 1 23. A material as in claim 22, wherein the clotting factor is thrombin.
- 1 24. A material as in claim 1 or 2, in the form of a sheet having a
2 thickness in the range from 1 mm to 25 mm.
- 1 25 . A material as in claim 24, wherein the sheet is packed in a sterile
2 pack.
- 1 26. A kit comprising:
2 a sterile pack;
3 a sterile sheet of material as in claim 24, packaged in the sterile pack; and
4 instructions for use setting forth a method for inhibiting bleeding by
5 placing the sterilized sheet of material over bleeding tissue.
- 1 27. A method for inhibiting bleeding, said method comprising:
2 applying the material of claim 21 to a wound site.
- 1 28. A method for delivering an active agent to a patient, said method
2 comprising:
3 exposing the material of claim 16 to patient blood.
- 1 29. A method for making a hemoactive material, said method
2 comprising:
3 dissolving a non-cross-linked biologically compatible polymer which
4 solubilizes when exposed to blood in an aqueous medium;

5 suspending particles of a cross-linked biologically compatible polymer
6 which forms a hydrogel when exposed to blood in the aqueous medium; and
7 drying the aqueous medium to form a solid phase comprising the dried
8 polymeric particles in a dry matrix of the non-cross-linked polymer.